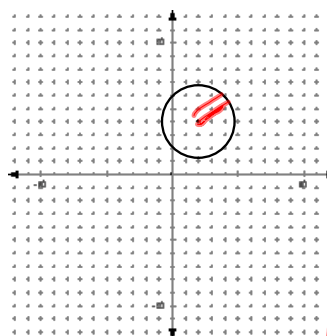


10-7  
Write and Graph  
Equations of Circles



Center (2,4)

$$r = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$r = \sqrt{(x - 2)^2 + (y - 4)^2}$$

$$r^2 = (x - 2)^2 + (y - 4)^2$$

$$r^2 = (x - h)^2 + (y - k)^2$$

$C(h, k)$   
 $r \rightarrow \text{radius}$

Write the equation of a circle with:

$C(3, -3)$  and  $d = 12$   $r = 6$

$$r^2 = (x - h)^2 + (y - k)^2$$

$$36 = (x - 3)^2 + (y + 3)^2$$

Write the equation of a circle with:

$C(-12, -1)$  and  $r = 8$

$$64 = (x + 12)^2 + (y + 1)^2$$

Write the equation of a circle with:  
Diameter endpoints  $(-3, -2)$  and  $(9, 4)$

$M\left(\frac{-3+9}{2}, \frac{-2+4}{2}\right)$   
 $M(3, 1)$

Plug in

$$r^2 = (x-3)^2 + (y-1)^2$$

$$r^2 = (9-3)^2 + (4-1)^2$$

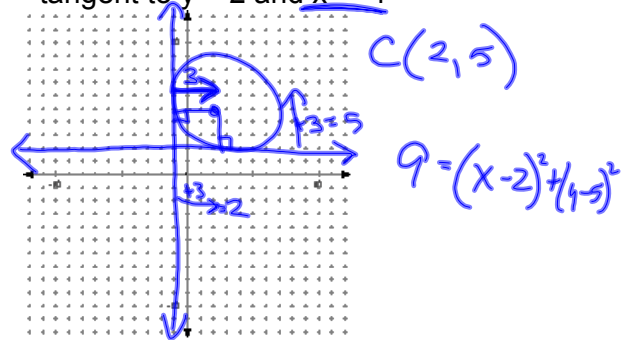
$$36 + 9$$

$$r^2 = 45$$

$$45 = (x-3)^2 + (y-1)^2$$

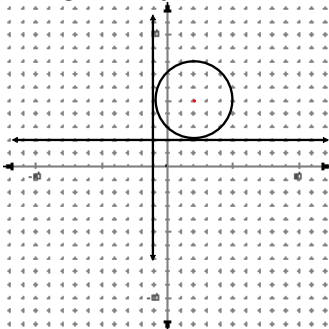
Write the equation of a circle with:

- Center in quadrant I
- $d = 6$   $r = 3$
- tangent to  $y = 2$  and  $x = -1$



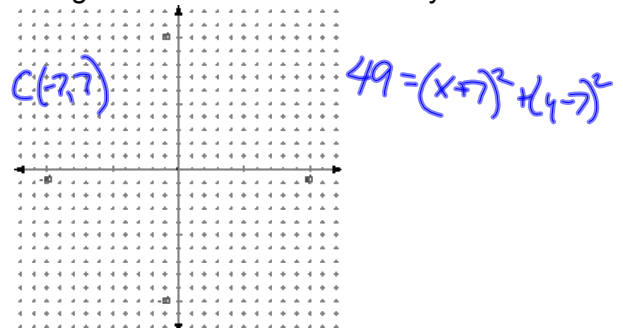
Write the equation of a circle with:

- Center in quadrant I
- $d = 6$
- tangent to  $y = 2$  and  $x = -1$



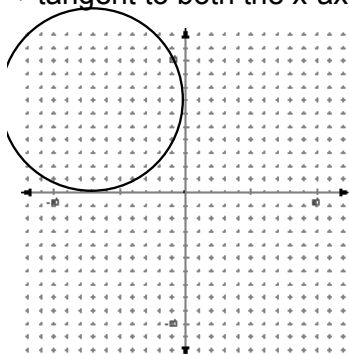
Write the equation of a circle with:

- Center in quadrant II
- $r = 7$
- tangent to both the x-axis and y-axis



Write the equation of a circle with:

- Center in quadrant II
- $r = 7$
- tangent to both the x-axis and y-axis



Write the equation of a circle with:

C(4, 2) and a point on the circle (8, -1)

$$r^2 = (x - 4)^2 + (y - 2)^2$$

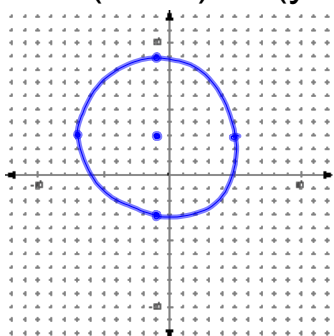
$$r^2 = (8 - 4)^2 + (-1 - 2)^2$$

$$25$$

$$25 = (x - 4)^2 + (y - 2)^2$$

Graph the following circle:

$$36 = (x + 1)^2 + (y - 3)^2$$

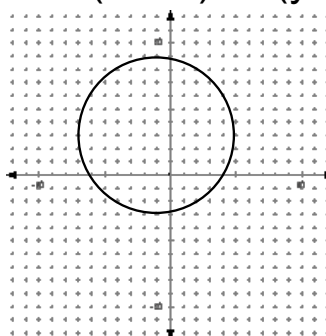


$$C(-1, 3)$$

$$r = 6$$

Graph the following circle:

$$36 = (x + 1)^2 + (y - 3)^2$$



$$x^2 + y^2 = 16 \quad (x-0)^2$$

What is the center?

$$C(0,0)$$

What is the radius?

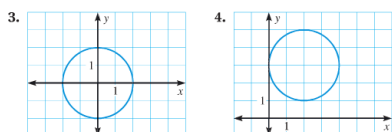
$$r=4$$

HW

p702-703

3, 4, 10, 13, 17-23odd 31

**WRITING EQUATIONS** Write the standard equation of the circle.



**WRITING EQUATIONS** Write the standard equation of the circle with the given center and radius.

10. Center  $(-4, 1)$ , radius 1

13. Center  $(3, -5)$ , radius 7

**WRITING EQUATIONS** Use the given information to write the standard equation of the circle.

17. The center is  $(0, 0)$ , and a point on the circle is  $(0, 6)$ .

19. The center is  $(-3, 5)$ , and a point on the circle is  $(1, 8)$ .

**GRAPHING CIRCLES** Graph the equation.

21.  $(x - 3)^2 + y^2 = 16$

23.  $(x - 4)^2 + (y - 1)^2 = 1$

**IDENTIFYING LINES** Use the given equations to determine whether the line is a *tangent*, *secant*, *secant that contains a diameter*, or *none of these*.

31. Circle:  $(x - 4)^2 + (y - 3)^2 = 9$

Line:  $y = -3x + 6$